JAMES E. BICKFORD
SECRETARY

PAUL E. PATTON
GOVERNOR

COMMONWEALTH OF KENTUCKY
NATURAL RESOURCES AND ENVIRONMENTAL PROTECTION CABINET
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MEMORANDUM

TO: Leslie Cole, Executive Director
Environmental Quality Commission

FROM: James E. Bickford, Secretary
Natural Resources and
Environmental Protection Cabinet

DATE: January 25, 2000

SUBJECT: OMU Tire Derived Fuel

Thank you for your correspondence of December 17, 1999 to Governor Patton concerning two items. One is the cabinet's plan to redesignate Boone, Campbell, and Kenton counties to attainment for the 1-hour National Ambient Air Quality Standard for Ozone. The other is the burning of waste tires at Owensboro Municipal Utilities (OMU). I am pleased to provide the following comments:

Thank you for your support of the proposed plan to redesignate the Kentucky portion of the Cincinnati-Hamilton moderate ozone nonattainment area to attainment for the one-hour ozone national ambient air quality standard.

Regarding the EQC Recommendation on the Proposal to Burn Tire Derived Fuel at the Owensboro Municipal Power Plant, a separate response to each point is provided as follows:

1. The Environmental Quality Commission (EQC) supports the concept of burning tire derived fuel (TDF) in a controlled and regulated manner at the Owensboro Municipal Utilities (OMU) Power Plant.

Thank you for your support.

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2. However, EQC expresses concern regarding potential toxic emissions that may be generated from the burning of waste tires at the OMU power plant and strongly urges the Kentucky Division for Air Quality to more fully characterize the risks posed by burning waste tires and conduct additional testing for the following chemicals:

Volatile Organic Chemicals (VOCs) such as benzene, chloroform, 1,2-dichloroethane, hexachlorobenzene, methylene chloride, styrene, toluene, and trichloroethylene;

Polycyclic aromatic hydrocarbons which there is evidence of human mutagenicity or other potential health consequences such as acenapthylene, benzo(a)pyrene, benzzo(g,h,I)perylene, benzo(k)fluoranthene, fluoranthene, fluorene, phenanthrene, and pyrene;

Metals of concern such as aluminum, lead, chromium, and arsenic because of their cancer-causing potential and other health effects;

Dioxins and furans that may be present in emission gases due to incomplete combustion.

In addition to Kentucky, the U.S. EPA and four other states have carefully evaluated combustion conditions and historical data, and have decided that these tests are unnecessary because of the rigorous combustion conditions in cyclone boilers like the one at OMU. Cyclone boilers have extremely rigorous combustion conditions including temperatures of 2800 degrees F, high residence time due to the large main combustion tower, and extreme turbulence. This combination assures the virtually complete destruction of organic materials.

Since the actual amount of TDF being added to the fuel blend is 2-4%, the resulting emissions will follow that of combusting coal. Therefore, polycyclic aromatic hydrocarbons (PAHs) while burning the TDF/coal blend will not vary significantly from burning only coal. Additionally, laboratory tests conducted by the US EPA indicated that PAH emissions did not significantly change while the unit operates at steady-state conditions ("Air Emissions from Scrap Tire Combustion", October 1997).

Regarding the cited inorganic materials, the concentration of these metals in TDF is generally lower than in coal. In addition, these bivalent and polyvalent materials are preferentially removed in OMU's electrostatic precipitator. The addition of TDF will tend to lower the metals emissions.

Regarding dioxins and furans, tires contain 0.2% chlorine, which is below the 0.5% threshold level for the formation of these compounds per Tom Fitzgerald's letter of January 3, 2000. This level is being further reduced by the displacement of the chlorinated butyl innerliner by chlorine-free materials.

3. EQC recommends that this testing be conducted in a timely manner during TDF operations as specified in the OMU Power Plant Title V Permit to assure this process does not pose a risk to public health or the environment.

The Title V permit requires OMU to conduct various tests to ensure the proper operation of the boiler reducing the chance to form the above chemicals. These tests include particulates and opacity. In addition, the title V permit requires specific continuous emission monitoring with respect to opacity, sulfur dioxide, carbon monoxide and/or oxygen, and nitrogen oxide. It should be noted that the cabinet maintains the discretion to require testing, at reasonable times, to insure compliance with the permit and all applicable requirements.

4. EQC recommends that public health and safety be considered paramount given that the OMU power plant operates within a populated area, and that provisions are made to fully anticipate and prevent problems associated with plant upsets, poor unit operation, and other potential unit failures while burning TDF.

Utility boilers are designed to operate at steady-state conditions in order to meet efficiency and regulatory requirements. If upset conditions and/or excess emissions occur, the source is required to immediately take actions to minimize emissions and to correct any malfunctions.

In conclusion, the cabinet has determined that based on all currently available information OMU's burning of a 2-4% TDF fuel blend will not pose an increased risk to the public health and safety. Therefore, the cabinet requires no further testing. However, the cabinet will reevaluate the burning of TDF at OMU if any future information indicates a significant risk increase to the human health or environment.

Again, I thank you for your interest in this matter. If you need more information or have follow-up questions, please contact Robert W. Logan, Commissioner of the Department for Environmental Protection, at 502/564-2150.

GFG/gfg

c: Madisonville Regional Office
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